

IN THE SPECIFICATION:

[0026] Thus, in order to prevent the crack formation in the film 18, it is essential that the film 18 have a better surface condition or a smaller degree of surface roughness. For example, when the engine valve 10 prior to the oxidation treatment has a surface roughness Rz of 1.5 Rz micrometer, the oxidation treated engine valve 10 is required to have a surface roughness Rz of 3.0 Rz micrometers or less after the oxidation treatment in order to effectively prevent the reduction of the fatigue strength MS (i.e., in order to hold the fatigue strength MS within a desired range).

[0034] In view of the results of the tests described above, an appropriate surface treating method of the engine valve 10 (titanium part) comprises the following steps. In a first step, from a correlation of the hardness against the film thickness t of the hard oxide film 18 formed on a surface of the valve 10, an effective thickness of the hard oxide film 18 corresponding to a required film hardness is determined. The effective roughness Rz is, for example, 14 micrometer micrometers or less (FIG. 5).